

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method for sharing multiple resources among users using an arbiter comprising:
 - allocating a first of the resources speculatively to a first one of the users for use during an access interval, absent a request for the first resource from the first user one of the users,
 - wherein speculatively allocating the first resource comprises allocating the first resource according to one of a fixed priority scheme and a scheme allocating the resource to a the user with the fewest requests,
 - wherein the arbiter receives an indication from at least one the first user as to whether the first user wishes to be speculatively allocated granted a the first resource.
2. (Original) The method as recited in claim 1 further comprising allocating at least a second of the resources for use during the access interval according to a request received by the arbiter for the second resource.
3. (Currently Amended) The method as recited in claim 4 wherein the arbiter speculatively allocates the first resource to the first user one of the users according to the first user one of the users being granted a request for use of one of the resources during a previous arbitration cycle.
4. (Currently Amended) A method for sharing multiple resources among users using an arbiter comprising:
 - allocating a first of the resources speculatively to one a first of the users for use during an access interval, absent a request for the first resource from the first user one of the users,
 - wherein the arbiter speculatively allocates the first resource to the first user one of the users according to the first user one of the users having requested the first resource during a previous arbitration cycle.

5. (Original) The method as recited in claim 4 wherein when multiple requesters requested the first resource during the previous arbitration cycle, the arbiter speculatively allocates the first resource to the one of the users according to one of a round-robin scheme and a pseudo random scheme.
6. (Currently Amended) The method as recited in claim 4 wherein when multiple requesters requested the first resource during a predetermined number of previous arbitration cycles, the arbiter speculatively allocates the first resource according to which of the users had the most requests for the first resource, during the predetermined number of previous arbitration cycles, the predetermined number being one or more ~~arbitration cycles~~.
7. (Previously Presented) The method as recited in claim 9 wherein speculatively allocating the first resource comprises allocating the first resource according to which of the users received the most grants for the first resource during a predetermined number of previous arbitration cycles.
8. (Currently Amended) A method for sharing multiple resources among users using an arbiter comprising:
 - allocating a first of the resources speculatively to a first one of the ~~other~~ users for use during an access interval, absent a request for the first resource from the first user one of the ~~users,~~
 - wherein speculatively allocating the first resource comprises allocating the first resource according to which of the users had the most requests for all resources combined, for a predetermined number of previous arbitration cycle.
9. (Currently Amended) A method for sharing multiple resources among users using an arbiter comprising:
 - allocating a first of the resources speculatively to a first one of the users for use during an access interval, absent a request for the first resource from the first user one of the ~~users,~~

wherein speculatively allocating the first resource comprises allocating the first resource according to which of the users had the most grants for a predetermined number of previous arbitration cycles.

10. (Canceled)

11. (Currently Amended) A method for sharing multiple resources among users using an arbiter comprising:

allocating a first of the resources speculatively to a first ~~one~~ of the users for use during an access interval, absent a request for the first resource from the first user ~~one of the users~~,

wherein speculatively allocating the first resource comprises allocating the first resource according to a fill level of at least one of a send queue and a receive queue associated respectively with a user and resource for an arbitrated data transfer.

12. (Currently Amended) A method for sharing multiple resources among users using an arbiter comprising:

allocating a first of the resources speculatively to a first ~~one~~ of the users for use during an access interval, absent a request for the first resource from the first user ~~one of the users~~,

wherein the a maximum number of resources unallocated by the arbiter for a particular access cycle are speculatively allocated for use during the particular access cycle.

13. (Canceled)

14. (Currently Amended) The apparatus as recited in claim 22, wherein the arbiter further receives a specified set of one or more resources indicating which resources the first user is interested in being speculatively allocated ~~granted~~.

15. (Currently Amended) The method as recited in claim 1 wherein the arbiter receives an indication from at least one resource as to whether the at least one resource wishes to be speculatively allocated ~~granted~~ to a user.

16. (Original) The method as recited in claim 1 wherein real-time requests are speculatively allocated by the arbiter.
17. (Currently Amended) The method as recited in claim 1 further comprising speculatively allocating ~~granting~~ more than one resource, including the first resource, to the ~~one~~ first user for use during the access interval of the users, thereby allowing for a multicast operation.
18. (Canceled)
19. (Original) The method as recited in claim 1 wherein the resources are storage locations and the users are processors.
20. (Original) The method as recited in claim 1 wherein the resources are communication links and the users are communicatively coupled to the communication links.
21. (Canceled)
22. (Currently Amended) An apparatus comprising:
a plurality of users; and
an arbiter coupled to receive requests for use of resources by respective users, the arbiter responsive to speculatively allocate a resource to a first user ~~one of the plurality of~~ users for use during an access interval, absent a request from the ~~one~~ first user for the resource;
wherein the arbiter receives an indication from ~~the first user~~ one or more of the users as to whether the first user wishes to be speculatively ~~granted a~~ allocated the resource.
23. (Original) The apparatus as recited in claim 22 wherein the arbiter allocates at least a second resource for use during the access interval according to a request received by the arbiter for the second resource.
24. (Currently Amended) The apparatus as recited in claim 22 wherein the arbiter speculatively allocates the ~~at least one~~ resource to the first user ~~one of the users~~ according to the first user ~~one of the users~~ having been granted a request for the resource during a previous arbitration cycle.

25. (Currently Amended) The apparatus as recited in claim 22 wherein the arbiter speculatively allocates the ~~at least one~~ resource to the first user ~~one of the users~~ according to the first user ~~one of the users~~ having requested the ~~one~~ resource during a previous arbitration cycle.
26. (Currently Amended) The apparatus as recited in claim 25 wherein when multiple requesters requested the ~~at least one~~ resource during the previous arbitration cycle, the arbiter is responsive to speculatively allocate the ~~at least one~~ resource to the first user ~~one of the users~~ according to one of a round-robin scheme and a pseudo random scheme.
27. (Currently Amended) The apparatus as recited in claim 25 wherein when multiple requesters requested the ~~at least one~~ resource during a predetermined number of previous arbitration cycles, the arbiter speculatively allocates the ~~at least one~~ resource according to which of the users had the most requests for the ~~at least one~~ resource, during the predetermined number of previous arbitration cycles, the predetermined number being one or more.
28. (Currently Amended) An apparatus comprising:
a plurality of users; and
an arbiter coupled to receive requests for use of resources by respective users, the arbiter responsive to speculatively allocate a resource to a first user ~~one of the plurality of~~ users for use during an access interval, absent a request from the ~~one~~ first user for the resource,
wherein speculatively allocating the ~~at least one~~ resource comprises allocating the ~~at least one~~ resource according to which of the users received the most grants for the ~~that at least one~~ resource or made the most requests for the ~~at least one~~ resource, during a predetermined number of previous arbitration cycles.
29. (Currently Amended) The apparatus as recited in claim 22 wherein speculatively allocating the ~~at least one~~ resource comprises allocating the ~~at least one~~ resource according to which of the users received the most grants or made the most requests, for a predetermined number of ~~or~~ previous arbitration cycles.

30. (Currently Amended) The apparatus as recited in claim 22 wherein speculatively allocating the ~~at least one~~ resource comprises allocating the ~~at least one~~ resource according to a fixed priority scheme.
31. (Original) The apparatus as recited in claim 22 wherein a maximum number of resources unallocated by the arbitration logic for a particular access cycle in response to requests are speculatively allocated for use during the particular access cycle.
32. (Canceled)
33. (Canceled)
34. (Currently Amended) An apparatus comprising:
a plurality of users; and
an arbiter coupled to receive requests for use of resources by respective users, the arbiter responsive to speculatively allocate a first resource to a first user ~~one~~ of the plurality of users for use during an access interval, absent a request from the ~~one~~ first user for the first resource, ~~and~~
wherein the arbiter speculatively allocates ~~grants~~ more than one resource, including the ~~at least one~~ first resource, to the first user for use during the access interval ~~one of the~~ users, ~~thereby allowing for multicast operations.~~
35. (Original) The apparatus as recited in claim 22 wherein the resources are memories and the users are processors.
36. (Previously Presented) The apparatus as recited in claim 34 wherein the resources are communication links and the users are communicatively coupled to the communication links.
37. (Canceled)
38. (Canceled)
39. (Currently Amended) A method of allocating resources in a system comprising:

arbitrating during a first arbitration cycle, requests received prior to a beginning of the first arbitration cycle, the requests for utilization of a first one or more of the resources during a particular usage interval; and
allocating ~~at least~~ a second of the resources unallocated during the first arbitration cycle, prior to a start of the particular usage interval; ~~and~~
wherein the ~~at least one~~ second resource is allocated utilizing a second arbitration cycle, subsequent to the first arbitration cycle, the second arbitration cycle arbitrating those requests received after the start of the first arbitration cycle.

40. (Currently Amended) The method as recited in claim 39 wherein the ~~least one~~ second resource is allocated speculatively.

41. (Canceled)

42. (Previously Presented) The method as recited in claim 39 wherein the second arbitration cycle is shorter than the first arbitration cycle.

43. (Currently Amended) An apparatus comprising:

an arbiter coupled to supply control information for use of resources;

the arbiter coupled to receive requests from users for use of the resources during a particular access interval, the arbiter responsive to a first group of requests received prior to the start of a first arbitration cycle to determine allocation of the resources during the first arbitration cycle according to the first group of requests and to receive at least a second group plurality of requests after the start of the first arbitration cycle, and to determine additional allocation of the resources according to the second group of requests during a second arbitration cycle, the second arbitration cycle being shorter than the first arbitration cycle, the first and second arbitration cycles allocating resources for use during the particular access interval.

44. (Canceled)

45. (Previously Presented) The method as recited in claim 4 wherein real-time requests are speculatively allocated by the arbiter.
46. (Currently Amended) The method as recited in claim 4 further comprising speculatively allocating ~~granting~~ more than one resource, including the first resource, to the first user for use during the access interval ~~one of the users, thereby allowing for a multicast operation.~~
47. (Previously Presented) The method as recited in claim 39 wherein real-time requests are speculatively allocated by the arbiter.
48. (Currently Amended) The method as recited in claim 39 further comprising speculatively allocating ~~granting~~ more than one resource, including the first resource, to a user for use during the particular usage interval ~~the one of the users, thereby allowing for a multicast operation.~~
49. (Previously Presented) The apparatus as recited in claim 43 wherein real-time requests are speculatively allocated by the arbiter.
50. (Currently Amended) The apparatus as recited in claim 43 wherein the arbiter speculatively grants allocates more than one resource, including the first resource, to the one of the users a user for use during the particular access interval ~~thereby allowing for a multicast operation.~~
51. (Currently Amended) A method for sharing multiple resources among users using an arbiter comprising:
 - allocating a first of the resources speculatively to one a first of the users for use during an access interval, absent a request for the first resource from the first of the users,
 - wherein speculatively allocating the first resource comprises using a scheme allocating the first resource to the a user with the fewest requests.